

MIDDLE CREEK DAM (HYALITE)

Fact Sheet

CONTRACT 1
DATE 11/30/09
HB 5

PROJECT DESCRIPTION

- ◆ Located on Middle Creek, 15 miles south of Bozeman on the Gallatin Forest in Gallatin Co.
- ◆ Owned by DNRC & managed by SWPB under a U.S. Forest Service Special Use Permit.
- ◆ Operated by Middle Creek Water Users Association since 1951. Project consists of:
 - ◆ Earthen Dam with concrete panels on downstream side, 125 ft. high, 1,900 ft. long.
 - ◆ 5-foot diameter, cast in place steel-lined concrete conduit.
 - ◆ One, 54-inch diameter butterfly operating gate and a 54-inch emergency gate valve
 - ◆ The gate valves are operated from a tower on the dam crest.
 - ◆ The principal spillway has a labyrinth crest inlet and two baffled apron type spillway chutes.
 - ◆ The auxiliary spillway is earth lined with a 530 foot-long concrete crest.
- ◆ Original construction completed in 1951
- ◆ Reservoir stores 10,184 acre-feet at normal full pool, covering 490 surface acres.
- ◆ Provides irrigation water for 73 farms and ranches and drinking water for 2,000 households (1/3 of the City of Bozeman water supply is provided by the project).
- ◆ The dam is a "high hazard" structure, which means that its failure could cause loss of life. Farms and ranches, homes, schools, roads, bridges and utilities are in the flood plain.

PROJECT DEFICIENCIES AND REHABILITATION

- ◆ No deficiencies currently exist.
- ◆ The dam embankment was raised 10 feet in 1991-1992 as part of a major rehabilitation that included a new spillway, outlet conduit and seepage and drain system. The project meets all current safety standards.

Project Cost (1992 Dollars) \$5,200,000. Funding was secured through a federal loan.

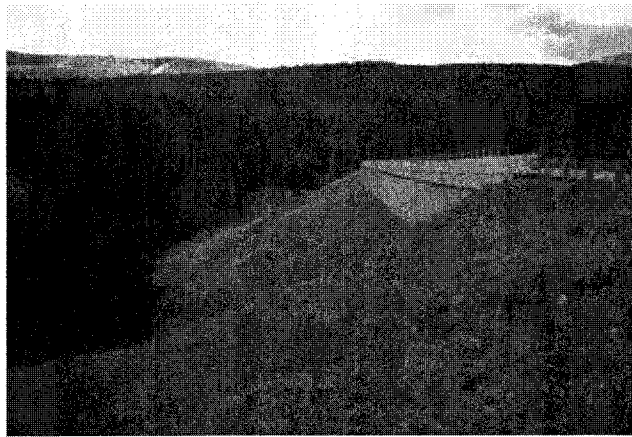
PROPOSED IMPROVEMENTS

- ◆ An updated automated instrumentation system will be installed in the fall of 2008. The new system will improve seepage, drain flow and reservoir monitoring. Included as part of this project was a feasibility study on installing an early warning system.

Project Cost: \$137,525.



Upstream face



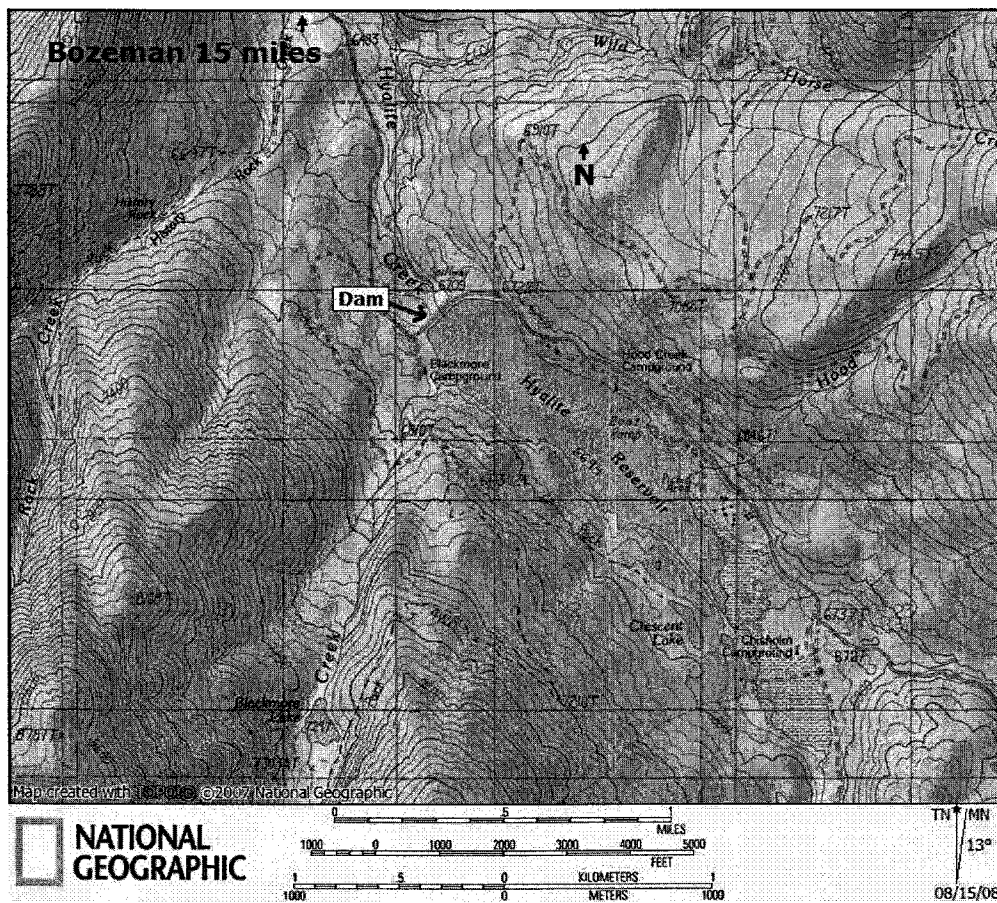
Downstream face



Lower Spillway

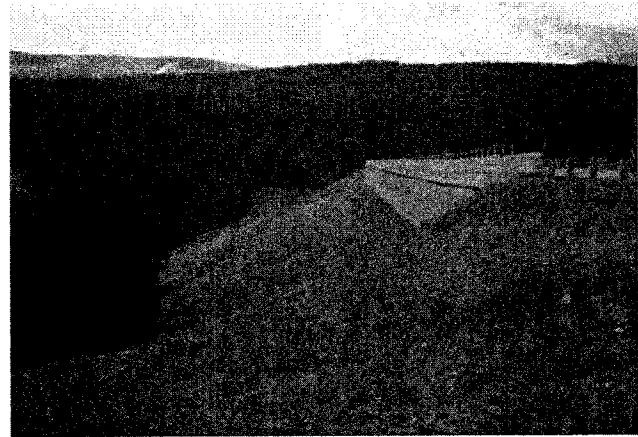


Upper Spillway





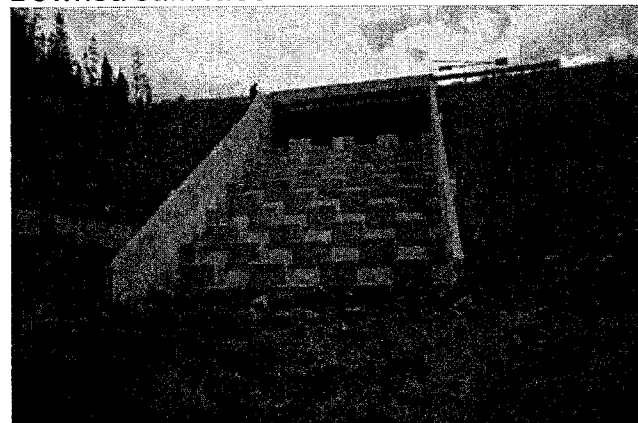
Upstream face



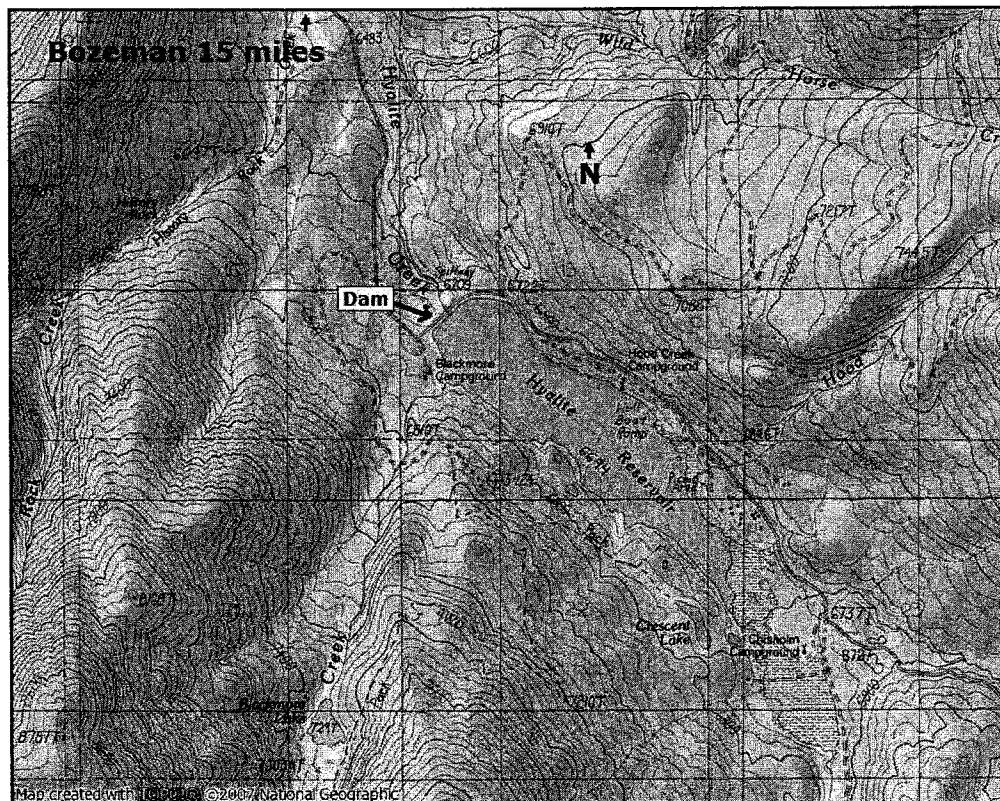
Downstream face



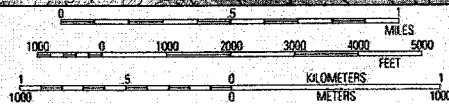
Lower Spillway



Upper Spillway

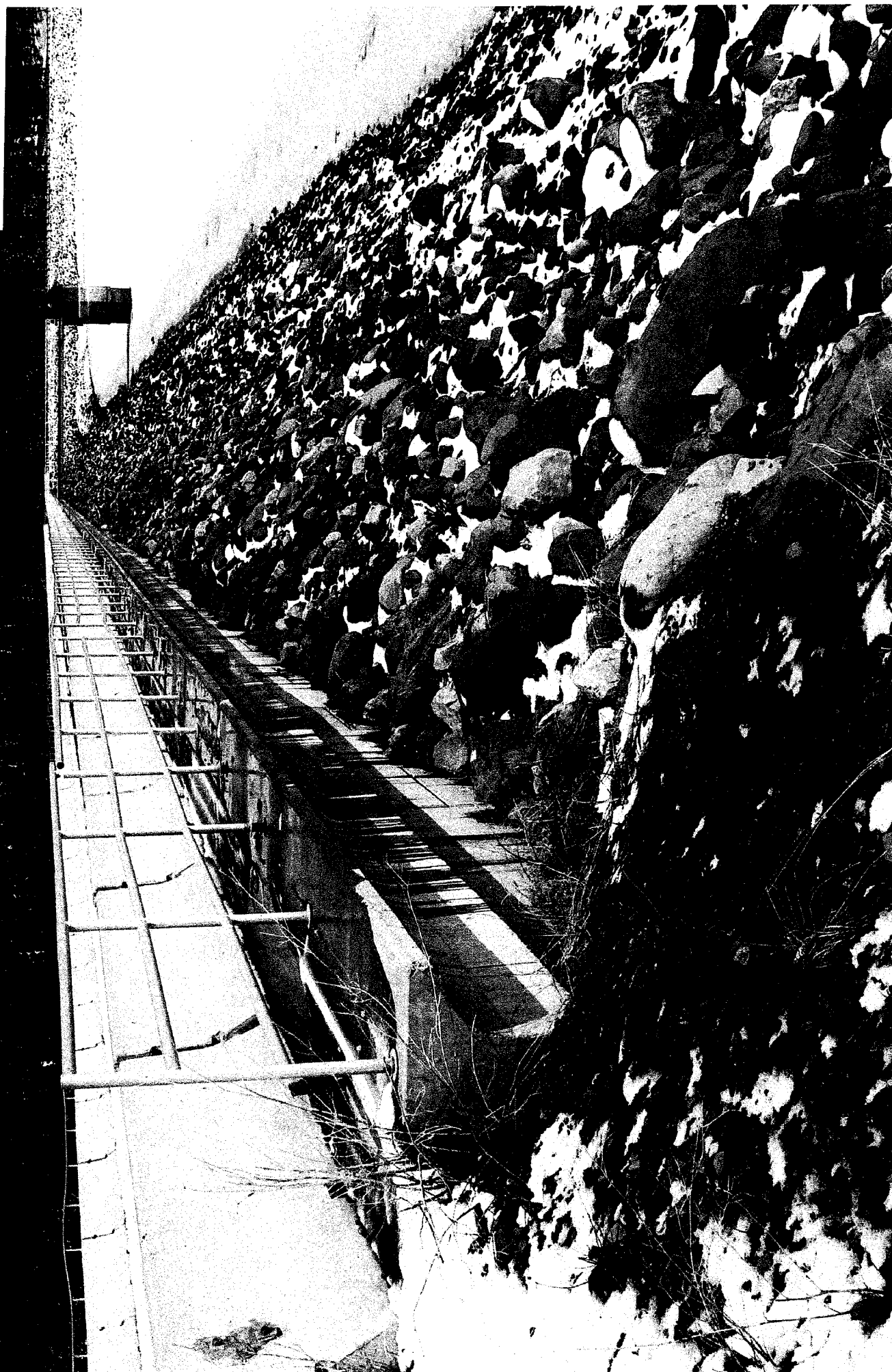


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GEOGRAPHIC**



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08/15/08

EXHIBIT 1
1130/09
HB 5



DEADMAN'S BASIN DAM

Fact Sheet

EXHIBIT 1

DATE 11/30/09

HD 5

PROJECT DESCRIPTION

- ◆ Off-stream reservoir with supply canal from the Musselshell River.
- ◆ Located approximately 10 miles east of Harlowton in Wheatland Co.
- ◆ Owned by DNRC & managed by SWPB
- ◆ Operated by Deadman's Basin Water Users Association since 1959

- ◆ Project consists of:
 - ◆ Earthen Embankment Dam, 80 feet high, 775 feet long and Earthen Embankment Dike, 18-feet high and 2,950 feet long.
 - ◆ Horseshoe-shaped 300 foot-long reinforced concrete outlet tunnel, with two 60x60-inch cast iron slide gates with vertical access tower.
 - ◆ 11.5 mile supply canal (600 cfs), two delivery canals (total 12.5 miles)

- ◆ Original construction completed in 1941. The dam was raised 10 feet in 1958.
- ◆ Reservoir stores 76,900 acre-feet at normal full pool, covering 2,120 surface acres.
- ◆ Provides irrigation water for 16 farms and ranches.
- ◆ The dam is a "high hazard" structure, which means that its failure could cause loss of life. Farms and ranches, roads, bridges, and utilities are located in the flood plain.
- ◆ Melstone, Ryegate, and Roundup are dependent on the water from the reservoir for their municipal water systems.
- ◆ 490 families, including ranchers, farmers, and residents of small towns, directly depend on receiving their contracted water shares from the Deadman's Basin Water Project.

PROJECT DEFICIENCIES

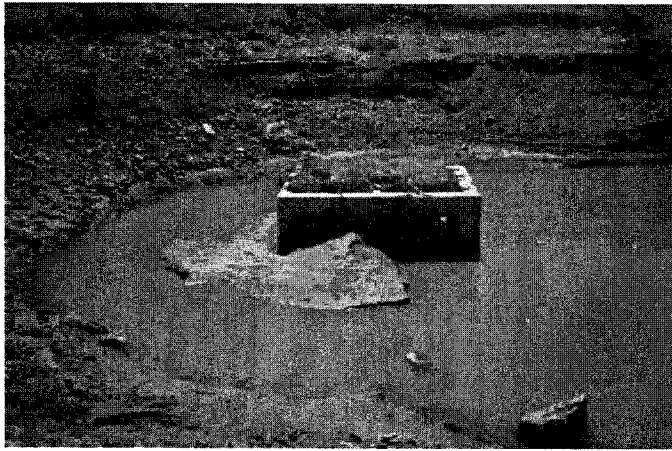
- ◆ Excessive seepage and uplift pressures requires the installation of a drain system and toe berm.
- ◆ Requires extension of outlet structure to accommodate toe berm.

PROPOSED REHABILITATION

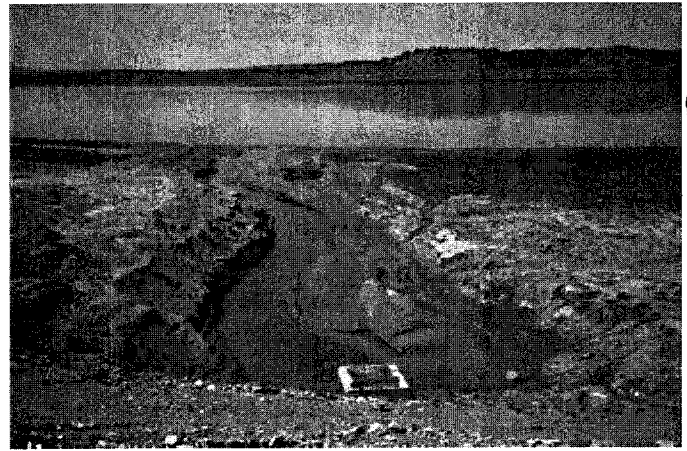
- ◆ Remove the old outlet structure, extend the conduit, and install a drainage system along side the new conduit extension
- ◆ Build a new energy dissipating outlet
- ◆ Construct a 15 foot high toe berm with a filter blanket drain

Estimated Project Cost: \$1,077,852

*\$500,000.00 Project
FINAL PKG READY NEXT WEEK*



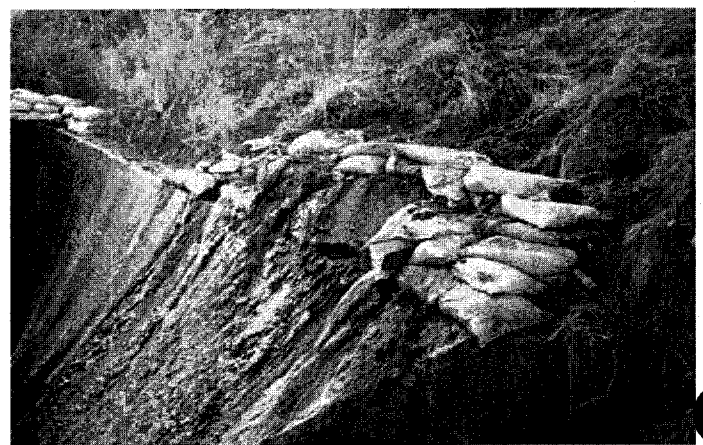
Inlet plugged with sediments



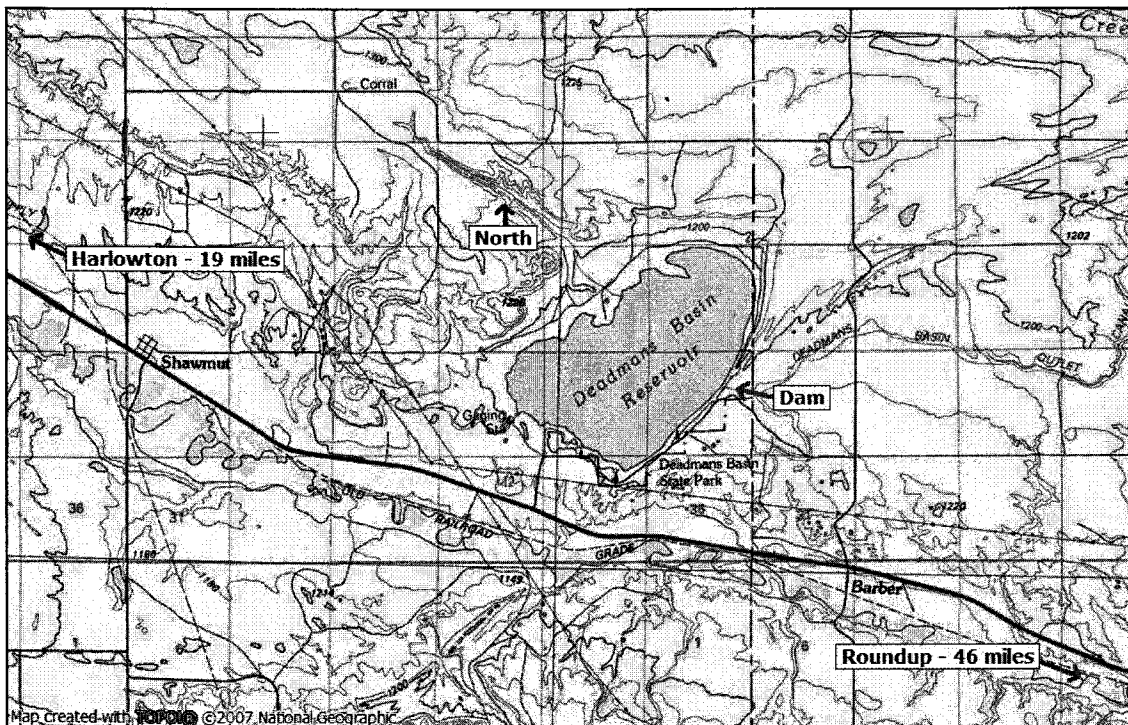
Inlet and upstream face



Low Level Outlet



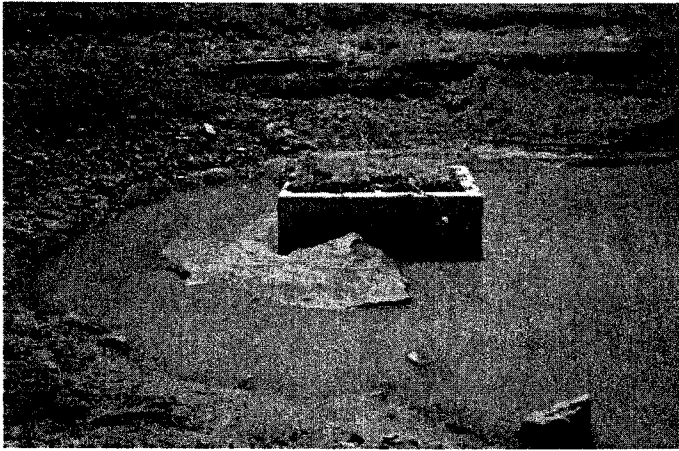
Low Level Outlet Seepage



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0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 miles
0 1 2 3 4 5 km

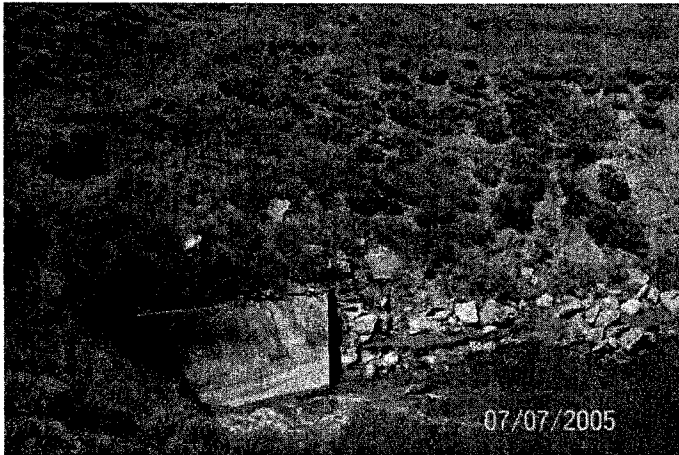
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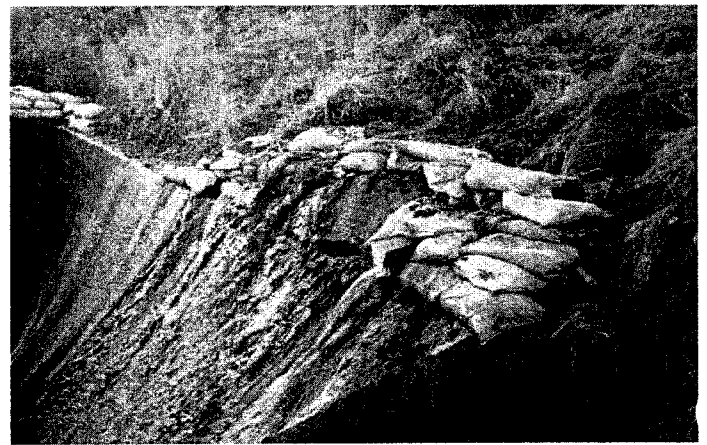
Inlet plugged with sediments



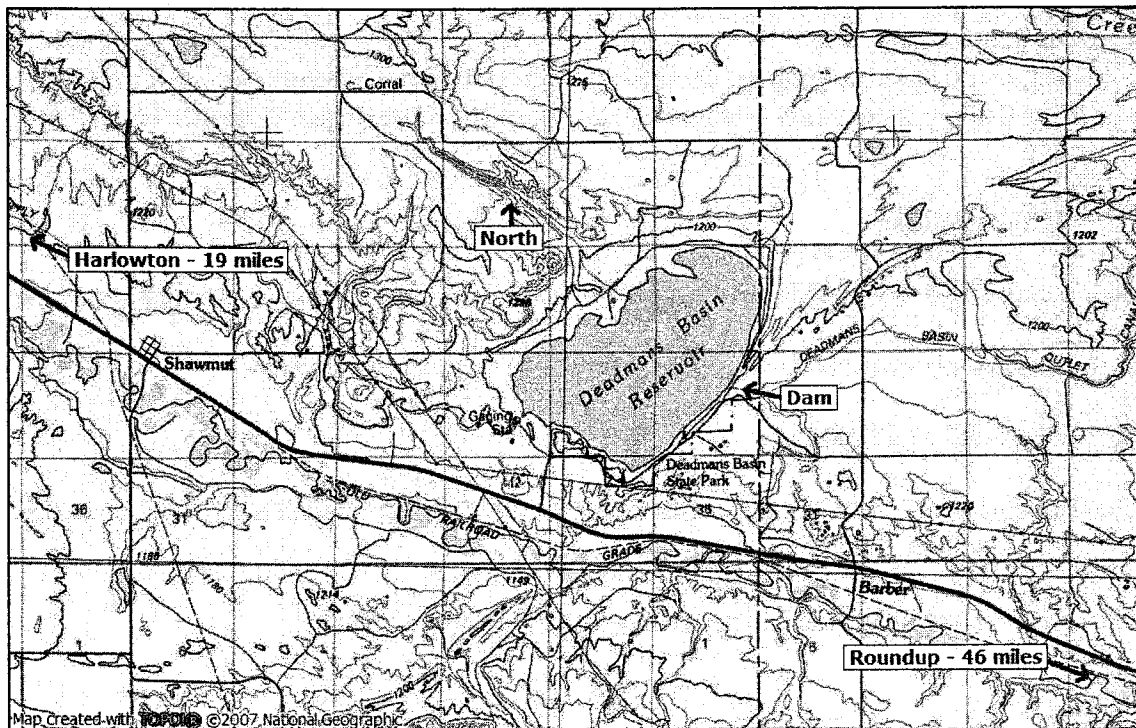
Inlet and upstream face



Low Level Outlet



Low Level Outlet Seepage



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0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 miles
0 1 2 3 4 5 km

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